The coded part of the message is given in seven groups. The first group, BCM, stands for the Bureau Central Météorologique, and indicates the source of the information. The above-named stations are indicated by the single letters printed in brackets above.

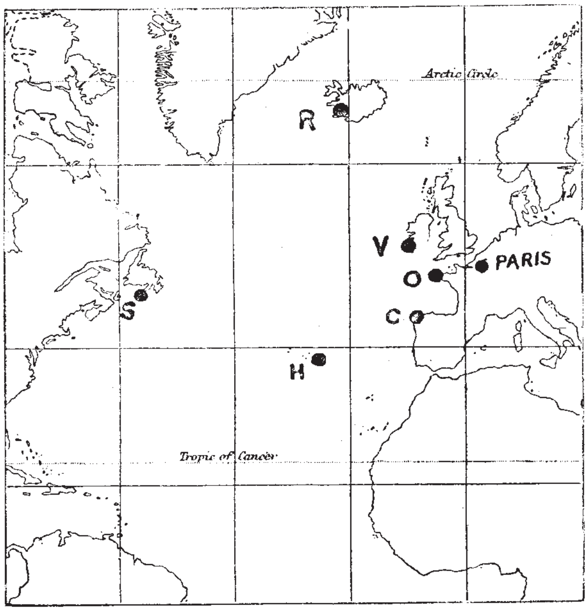

Fig. 2.—Chart showing the positions of the stations neighbouring the North Atlantic, the meteorological conditions at which are daily transmitted by radio-telegraphy from the Eiffel Tower. (See text for names of stations indicated.)

The first two figures in each group indicate the barometric pressure in millimetres, it being understood that 700 mm. should be added. The next two figures represent the wind direction in points of the compass as follows :—

Code No.	32	02	04	06	08	10	12	14	16	18	20	22	24	26	28	30
Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW

The fifth figure denotes the wind force on a scale ranging from 0, a calm, to 9, a hurricane. The sixth and last figure shows the state of the sea, a "calm" being denoted by 0 and "tremendous" by 9.

In the case of Reykjavik and St. Pierre, the sixth figure is omitted, no reports for transmission being available.

It sometimes happens that when the messages are being sent out from the Eiffel Tower, some of the data for some of the stations have not been received by the Bureau Central Météorologique, and therefore cannot be transmitted. In these cases the signal –..– or X is substituted for any unknown figure.

The following statement gives a full translation of the message marked (*a*) given previously, the code letters and figures being given in the first, third, fifth, seventh, and eighth columns.

Bureau Central Météorologique.

Letter	Station	Barometer		Wind			Sea
			mm	Direction		Force Scale 0-9	Scale 0-9
R	Reykjavik	51	751	00	N	0	—
V	Valencia	49	749	14	SSE	2	4
O	Ouessant (Ushant)	55	755	16	S	3	3
C	Corunna	62	762	18	SSW	1	2
H	Horta (Azores)	65	765	30	NNW	4	3
S	St. Pierre	46	746	20	SW	7	—

Low pressure west Europe high to the north

It is impossible to overestimate the great value such messages can be to outward and homeward bound ships that receive them, for instead of having to gauge the approaching weather conditions from their own isolated observations they can form a far more accurate judgment by the deductions from the radio-telegraphic data.

While the distribution of time and weather signals will be of general utility, perhaps its most important value will be felt by sailors. Cut off from all shore communication with the exception of wireless, they will be put on nearly the same equality as land stations when the international system is in full swing.

William J. S. Lockyer.

NOTES.

In the King's Speech at the opening of Parliament on Monday reference was made to the following matters, among others, to be brought forward during the session :—A guarantee from the Imperial Exchequer of a loan by the Government of the Sudan for the development therein of the industry of cotton-growing; proposals for the better care and control of the feeble-minded and for the further restriction of the industrial employment of children; proposals for the development of a national system of education. In the course of his comments upon the last-named subject, Lord Crewe remarked, in the House of Lords, that it is not the intention of the Government to endeavour to force through Parliament in this session a vast measure dealing with national education. "But in view of what has fallen from the Prime Minister, and also in view of the observations made by the noble and learned lord on the Woolsack at Manchester in the beginning of January, which were the sequel to a close inquiry into the subject, we think it is quite proper to place the country in possession of the general lines of our intentions during the coming session, although I do not suppose that we shall be able to proceed very far towards getting them carried into law. We have not embarked on the consideration of the question without counting the cost or without realising that it will be necessary to provide more than is provided at present out of national funds towards the cost of education."

DR. DUGALD CLERK, F.R.S., has been elected a member of the Athenæum Club under the provisions of the rule which empowers the annual election by the committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public services."

THE Trustees of the Indian Museum have appointed Dr. N. Annandale as their representative at the International Congress of Zoology, to be held at Monaco this month.

THE ninth International Physiological Congress will be held at Groningen on September 2–6 next, under the presidency of Prof. H. J. Hamburger, professor of physiology in the University of Groningen.

MR. DAVID S. PRENTICE, superintending inspector, has been promoted to the post of chief inspector of the veterinary branch of the Department of Agriculture and Technical Instruction for Ireland.

THE death is announced at Paris, at sixty-nine years of age, of M. A. M. Picard, vice-president of the Council of State and an honorary member of the Institution of Civil Engineers. M. Picard was the author of several works on engineering subjects, and many comprehensive reports upon the achievements of arts and industry at the close of the nineteenth century and after.

AT a meeting of the council of the British Association, held on March 7, a vote of condolence with Lady White on the death of Sir William White, president-elect of the association, was passed. The presidency for the forthcoming meeting in Birmingham was considered, and subject, under the rules, to ratification at an extraordinary meeting of the council, to be held on April 4, Sir Oliver Lodge, F.R.S., will be nominated as president. There will be a meeting of the general committee on the same day to make the election.

AMERICA has lost a bacteriologist of great promise by the death, in his forty-fifth year, of Dr. P. H. Hiss, jun. After graduating in arts at Johns Hopkins and in medicine at Columbia, he was appointed in 1895 assistant in bacteriology at the College of Physicians and Surgeons at Columbia University. From that post he was promoted successively to an instructorship, adjunct professorship, and, in 1906, to the full professorship in that subject. Dr. Hiss was joint author of a widely used text-book of bacteriology, and had also published a series of technical studies. He was best known by his methods of detecting typhoid bacilli, and by his use of the leucocyte as a cure for pneumonia and erysipelas.

A MARBLE bust of the late Mr. Brian Houghton Hodgson, executed by Thornycroft in 1844, has been presented by his widow to the British Museum (Natural History). The bust, of which a photograph is given in Sir W. W. Hunter's "Life of Hodgson," represents Hodgson, who died in 1894, at the age of forty-four. By the gift of his natural history and anthropological collections made while British Resident at Khatmandu, in the first half of last century, and subsequently while living privately at Darjiling, Hodgson greatly enriched the museum, and it is therefore appropriate that his bust should find a home in the building, where it is to be placed, we believe, alongside that of Dr. Gray, at the entrance to the Upper Mammal Gallery.

THE Franklin Institute, Philadelphia, acting through its committee on science and the arts, recently made the following awards of the Elliott Cresson gold medal, the highest in the gift of the institute:—Dr. C. P. Steinmetz, of Schenectady, New York, in recognition of successful application of analytical method to the solution of numerous problems of first practical importance in the field of electrical engineering; Emile Berliner, of Washington, D.C., in recognition of important contributions to telephony and to the science and art of sound-reproduction; Dr. I. Randolph, of Chicago, Ill., in recognition of distinguished achievement in the field of civil engineering; Lord Rayleigh, O.M., in recognition of extended researches of signal importance in physical science; Sir William Ramsay, K.C.B., in recognition of numerous discoveries of far-reaching importance in the science of chemistry; Prof. Emil Fischer, of Berlin, in recognition of numerous contributions of fundamental importance to the science of organic and biological chemistry.

ONE of the largest of the great scientific and industrial congresses is to be held in London in the early part of June, 1915. This is the sixth International Congress of Mining, Metallurgy, Applied Mechanics, and Practical Geology. These congresses take place at intervals of five years, and the last, which was brilliantly successful, was held at Düsseldorf in 1910, previous congresses having been held in Paris and Liége. The attendance at the Düsseldorf Congress was more than 2000, and it is anticipated that the attendance in London in 1915 will be equally large. An influential committee has been formed to make the necessary arrangements, and the movement is being actively supported by the University of London, Imperial College of Science and Technology, Geological Society of London, Institution of Mechanical Engineers, Iron and Steel Institute, Society of Chemical Industry, Institution of Mining Engineers, Institution of Mining and Metallurgy, Institute of Metals, South Wales Institute of Engineers, Cleveland Institution of Mining Engineers, West of Scotland Iron and Steel Institute, Staffordshire Iron and Steel Institute, Sheffield Society of Engineers and Metallurgists, and by numerous firms interested in the various industries represented.

THE winter, as comprised in the period for the thirteen weeks ended March 1, is shown by the Meteorological Office to have been mild, wet, and somewhat sunless over the entire area of the United Kingdom. The excess of temperature was greatest in the south-east of England, where the mean for the period was 3° above the average. In the Midland Counties and in the east of England the mean temperature was 2·5° above the average. The heaviest rainfall for the winter was 14·90 in. in the west of Scotland, which was followed by 14·70 in. in the south of Ireland, and 14·58 in. in the south-west of England. The greatest excess of rain was 32 per cent. above the average in the south-west of England, and about 25 per cent. in excess in the Midland Counties, the south-east of England, and in the north and south of Ireland. The sunshine for the winter was sixty hours deficient in the east and west of Scotland, but only about twenty hours deficient in the south-east of England. The temperature for the winter of 1911–12 was about equally in excess to that of the recent winter. The excess of the rainfall was everywhere greater except in the north of Scotland, where in 1911–12 there was a deficiency. In the south-west of England the aggregate rainfall in the winter of 1911–12 was 16·36 in., which was 5·29 in. more than the average. The duration of bright sunshine was also everywhere deficient in the winter of 1911–12, except in the north of Scotland. The characteristics of the last two winters were very similar over nearly the whole of the United Kingdom.

The ninth International Zoological Congress will be held at Monaco, under the presidency of H.S.H. the Prince of Monaco, from Tuesday, March 25, to Saturday, March 29. The congress this year appears to be specially attractive, there being up to the present time above 500 members who have enrolled. Besides special communications which are to be made in the seven sections of the congress, questions of general interest will be discussed at the early meetings. One point the zoologists are specially asked to discuss, and in some way agree upon, is concerning the use of generic and specific names, as to whether in all cases zoological nomenclature should be given absolutely to the original generic and specific name, or whether exception should be made in certain time-honoured generic and specific names which are thoroughly familiar to every zoologist. No lengthy excursions are arranged, but there will be receptions held at the Oceanographical Museum, at the palace, and in other places in the principality. Included in the programme is a fête performance at the opera. The fee for attendance is 25 francs, and application should be made at an early date for particulars regarding hotel accommodation, &c., to the secretary, whose address until March 15 is Prof. Joubin, Oceanographical Institute, 195 Rue Saint-Jacques, Paris, and afterwards the Oceanographical Museum, Monaco.

In the February issue of *Man* Messrs. M. Longworth Dames and T. A. Joyce describe a remarkable steatite relief acquired by the British Museum from the Swat Valley, on the north-west Indian frontier. It represents in a most artistic way the famous story of King Sivi, who saved a pigeon from a hawk, and to compensate the pursuer cut off pieces of his own flesh equal in weight to the bird. This is the only known representation of the story, and the acquisition of the relief is particularly interesting because, according to the Chinese Buddhist pilgrim, Hiouen Tsang, Asoka built a stupa in the land of Udyāna, the modern Swat Valley, to commemorate this incident. The discovery of the relief will now probably give a hint as to the position of the stupa. The writers point out that this story is also localised in the Indus Valley, and, being imported into Europe, was possibly the origin of the legend which formed the basis of "The Merchant of Venice."

Referring to Prof. R. T. Hewlett's article on the pasteurisation of milk, published in our issue for February 6 last (vol. xc., p. 623), "Paterfamilias" sends an account of a method of preserving milk he has found successful. The plan, which Prof. Hewlett considers very good, was to put the milk in an earthenware bottle with narrow neck, and to keep the bottle in a boiling water bath for twenty or thirty minutes, according to the size of the bottle. While still in the bath, a rubber stopper with a thistle funnel stuffed with cotton-wool was inserted in the neck and the bottle removed. As pointed out, however, in Prof. Hewlett's article, even with the precautions adopted by "Paterfamilias," in hot weather, unless *cooled* after treatment, the milk is liable to undergo very undesirable changes.

We have been favoured with a cutting from *The Daily Malta Chronicle* of February 17, in which Mr. N. Tagliaferro, who has for some time been collecting fossil bones from a rock-fissure at Corradino, records the discovery of a large series of remains of giant land-tortoises. Most of these, it is stated, are referable to *Testudo robusta,* and the smaller *T. spratti* of Leith Adams. One of the specimens is, however, asserted to indicate a tortoise nearly half as large again as the biggest described example of the former, and may, it is suggested, represent a third species. These and other remains have been deposited in the museum at Valletta, and will, no doubt, be fully described in due course.

It is announced in the Proceedings of the Philadelphia Academy for December, 1912, that the work of rendering the library and museum fireproof, which was undertaken through the aid of the Commonwealth of Pennsylvania, has at length been completed. As the library of natural history works is stated to be the largest in America, while the museum is particularly rich in type specimens, the importance of the achievement can scarcely be overrated. New quarters have been prepared for the entomological department, which are stated to meet all the requirements of workers; the department is devoting special attention to the economic aspects of entomology and the etiology of diseases due to insects.

In the *Naturwissenschaftliche Wochenschrift* (xii., 5, February 2, pp. 65–69) Mr. H. Nachtsheim gives a valuable summary of observations and experimental work on the reproductive cycle of Rotifers. Most of the work has been done on *Hydatina senta,* and the greater part of his paper deals with this species. He reviews the earlier work of Maupas and Nussbaum, shortly summarises that of Punnett, and then discusses at greater length the experiments of Whitney and A. F. Shull, who have sought to determine what are the intrinsic and extrinsic factors which bring into existence male-producing and female-producing parthenogenetic females. It is concluded that while in many Rotifers, as Lauterborn has shown, there is a fairly regular cycle, in Hydatina external conditions, especially the chemical condition of the water, have much greater effect, perhaps because Hydatina lives in small pools which are more readily affected by environmental factors. Little is said about cytological observations, and the work of Lenssen, which is probably only in apparent contradiction of the later observations of Whitney, is not mentioned. Otherwise it appears to be a very complete and compact summary of our present knowledge of the subject.

PROF. G. KLEBS has forwarded a reprint of his recent important paper (*Verhandl. d. nat.-med. Ver.*, Heidelberg, 1912) on the morphology and phylogeny of the Peridineæ, a group of Protista which has in recent years received a vast amount of attention on account of the important part which these organisms play in the phytoplankton of both salt and fresh water. In this paper the author describes a number of new genera which are of remarkable interest as connecting up the typical Peridineæ with the Flagellate group Cryptomonadina, and showing also that on the other hand the Peridineæ have apparently given rise to Alga-like forms characterised by gradual loss of motility, and the development of resting colonies showing vegetative cell-division. He also discusses the possible affinities between the Peridineæ and certain groups of Algæ (Diatomeæ, &c.), and of Protozoa (*Infusoria ciliata* and Radiolaria), and represents his views in a diagrammatic "family tree."

THE last number of the Bulletin of the Seismological Society of America contains two short accounts by Mr. G. A. Clark and Mr. A. G. McAdie of the eruption of the Katmai volcano in Alaska last June (vol. ii., pp. 226–229, 236–242). The volcano is a rather insignificant peak, less than 5000 ft. in height, and, before last June, was supposed to be extinct. The eruption began on June 6 at about 4 p.m., and was seen by several observers on the island of Kodiak, at a distance of seventy-five miles. A heavy fall of ashes took place during June 6 and two following days, but ceased about three days later. The town of Katmai, which was explored on June 14, was found to be buried in ashes to a depth of three or four feet, and on Kodiak island the thickness of the layer of ashes was more than a foot. Further eruptions occurred during each of the next four months, those of August 19 and October 25 being of some violence.

THE useful report on the state of the ice in the Arctic seas during 1912, published by the Danish Meteorological Institute, is of more than usual interest in view of the abnormal conditions which obtained in the North Atlantic in that year. It includes, as before, monthly summaries prepared from all reports received, and charts showing the condition of the ice during each of the months April–August. The winter of 1911–12 was on the whole mild in the region of Bering Strait and in Greenland, but cold in the European Arctic seas; in the White Sea there was much ice until the first half of June, and the Kara Sea seems to have been unapproachable all through the summer. In Barents Sea the edge of the ice throughout the summer was more westerly and southerly than usual. The coast of Iceland was quite free during the year, but the edge of the ice was not far off the northern shore. Vessels were able to put into Angmagsalik (East Greenland) about the third week in July, owing to there being no great drift southward of the vast masses of ice further north; a possible result may be a heavy drift this year. The conditions along the west coast of Greenland were about normal. Only few reports from Bering Sea and Strait were received, and none from the Beaufort Sea. On this account the institute makes an impressive appeal for more cooperation in its important work; during the year in question the available information was almost entirely received from Norwegian and Danish sources. The proposed publication by the Meteorological Office in its *Weekly Weather Report* of observations respecting the state of the ice off the east coast of North America during this season, received by wireless messages from the whaler *Scotia,* which has been chartered by the Board of Trade in conjunction with the North Atlantic steamship lines, will be an important step in the direction of the appeal of the Danish Meteorological Institute.

FROM the *Rendiconti* of the Royal Lombardy Institution we learn that the prize for airships, which was founded by the late Dr. Cagnola long before the days of aërial navigation, has again been unawarded, as has, indeed, been the case during practically the whole period of development of modern airships and dirigibles. The report of the referees on the work submitted by the solitary competitor, coupled with the absence of other competitors, seems to indicate that Italian aëronauts, as well as others competent to submit Italian, French, or Latin accounts of their successful experiments, are deterred from making any serious effort to compete for the prize, and this for some reason or other which is doubtless well known to them. The object which Dr. Cagnola had in view has been attained quite independently of his benefaction, and it is surely unfortunate that the latter has signally failed to further this end.

POSTAGE stamps do not often afford material for scientific discussion, but an interesting point is mentioned by Mr. Sam S. Buckley in his book on the marginal varieties of the Edwardian stamps of Great Britain (published by Oswald Marsh, London), in connection with a change that was initiated in the autumn of 1911 in the mode of perforating the new English issues. Until then the horizontal and vertical perforations were at the same distance apart, namely 14 in 2 centimetres. It was found, however, that the stamps would not tear well along the horizontal lines, and the explanation was that in machine-made paper the fibres have a tendency to lie in certain directions, thus making the resistance to tearing unequal in different directions. A remarkable result of these experiments was the conclusion that the resistances could be equalised by using fifteen perforations horizontally to fourteen vertically, the extra perforation making all the difference.

WE have received a copy of a new illustrated catalogue of physical apparatus issued by Messrs. F. E. Becker and Co., Hatton Wall, E.C. It is a substantial quarto volume of more than a thousand pages, and covers most of the apparatus, from millimetre scales to electric motors, likely to be used in a physical laboratory, while the requirements of the engineer and miner are not forgotten. Some of the newer apparatus is described in detail, and instructions as to its use are given, as, for instance, in the case of the Bunsen ice calorimeter on p. 950, and of the stereo pyrometer on p. 1013.

THE first number of *Scientia* for 1913 contains two articles which throw doubt on the validity of the recently discovered sun-spot periods of five and eight years, and on the principle of relativity which has taken so prominent a place in recent theory. The first article is by Mr. E. W. Maunder, of Greenwich. The second article, by Prof. M. Brillouin, of the Collège de France, points out the slenderness of the foundation on which the theory of relativity has been reared, and maintains that the impossibility of detecting a relative motion of ether and matter, which forms the basis of the theory, is merely an experimental difficulty of the present time, and ought not to be elevated into a universal principle. Prof. Brillouin also takes exception to some of the more recent propositions stated by Prof. Einstein, as, for example, that energy has inertia and weight, and concludes that the principle of relativity introduces more difficulties than it solves.

THE *Verhandlungen* of the German Physical Society for January 15 include a short *résumé* by Dr. F. Reiche of the results he has obtained for the distribution of intensity in a fine spectrum line under various conditions. He considers a thin layer of a luminous gas the electron systems attached to the atoms of which are oscillating owing to the impact on them of electrons or atoms. The breadth of the line emitted is produced partly by damping due to radiation, and to inter-atomic forces, and partly to the motion of the emitting centres themselves in accordance with the kinetic theory of gases. As a result, he finds that the distribution of intensity is to a great extent determined by a parameter, which, if small, gives the distribution found previously by Lord Rayleigh; if large, a distribution the author proposes to call the "dispersion distribution." In the former case, increase of density of the gas or of thickness of the layer of gas leads to only a small amount of widening of the line, in the latter to a considerable widening. These theoretical conclusions have been verified experimentally.

A YEAR ago reference was made in NATURE to the elegant proof given by Willstätter and Escher that lutein, the yellow pigment of yolk of egg, was similar to, if not the same as, the xanthophyll present in leaves. In the interval other animal pigments have been investigated, and Dr. Escher now announces that the yellow pigment of the *Corpus luteum* is identical with carrotene, such as is present in carrots and leaves, and closely allied to lycopin, the colouring matter of tomatoes. Carrotene has been shown by Monier-Williams to form the yellow colouring matter of wheaten flour, and it is of interest to note that Escher states he has preliminary evidence that the yellow pigment of fat is similar in composition. Carrotene is an unsaturated hydrocarbon, $C_{40}H_{56}$, whereas xanthophyll has the formula $C_{40}H_{56}O_2$. The two classes of pigments are separated by shaking with a mixture of alcohol and light petroleum. The liquid forms two layers, the upper one of petroleum ether containing the carrotene, and the lower alcoholic layer containing the xanthophyll. The ovaries of no fewer than 10,000 cattle were required for the investigation, and yielded less than half a gram of pigment.

FIVE recent additions to the "Cambridge Manuals of Science and Literature" have been received from the Cambridge University Press. One volume, by Prof. J. H. Poynting, has on its cover, "The Earth," but an examination of the title-page shows that its shape, size, weight, and spin only are dealt with. In Mr. A. J. Berry's book, "The Atmosphere," the subject-matter has been restricted to the more purely chemical and physical phenomena, meteorology being omitted. Dr. Alex. Wood writes on "The Physical Basis of Music," and provides an elementary account of the principles of the subject. In "The Story of a Loaf of Bread," Prof. T. B. Wood gives a popular account of the subject so far as farming, milling, and baking are concerned. Mr. E. L. Attwood, writing from the naval architect's point of view, contributes a volume on "The Modern Warship." The volumes, which are each sold at 1*s*. net, appear to be addressed to the general reader, but it is to be feared that few such readers will be prepared to give the sustained attention which the treatment of the subject in most of the volumes demand. In accuracy and authoritativeness the books leave nothing to be desired, and as introductions to more advanced treatises the series may be recommended unreservedly.

A BRIEF account of the thirteenth meeting of the Australasian Association for the Advancement of Science, held in January, 1911, at Sydney, appeared in the issue of NATURE for February 23, 1911 (vol. lxxxv., p. 558). We have now received the official report of this meeting, edited by the permanent honorary secretary, Mr. J. H. Maiden, assisted by the secretaries of sections. It is an imposing volume of 766 pages, and is well and profusely illustrated with forty-eight plates, in addition to the illustrations in the text. The report provides excellent evidence of the industry and enthusiasm of Australasian men of science, and of this record of a year's work the association may well be proud.